# Invitation to Bid

Central Vermont Community Land Trust
107 N Main St., Barre Vermont 05641
802-476-4493

The Central Vermont Community Land Trust (CVCLT) invites bonded General Contractors to bid on general construction and renovation work at four multifamily properties owned by CVCLT: 1 Bromur Street, Barre; 2 Bromur Street, Barre; 11 Bailey Street, Montpelier and 37 Barre Street, Montpelier.

Sealed bids will be received at the offices of CVCLT until 2pm, XXXXXX. At that time and place, the bids will be opened in public and read aloud.

Bids must be accompanied by a bid bond in the amount of five percent (5%) of the lump sum bid amount. In addition, CVCLT will require a performance bond in the amount of one hundred percent (100%) of the contract price and a labor & materials bond in the amount of one hundred percent (100%) of the contract price.

A pre bid walk through will be held XXXXX. The walk through will be mandatory for all General Contractors choosing to submit a bid. All four buildings will be visited.

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## Description of the properties and general scopes of work

**1 Bromur Street, Barre, VT (lower building)**
This is a 2 story historic building with 12 apartments and 26 residents. The roof is a gable style with asphalt shingles and a 5/12 pitch. The roof faces nearly NE and SW. The eave of the roof is approximately 18 ft. above ground level. General scope of work includes: window replacement, installation of solar DHW system, replace boiler, replace exterior doors, and upgrade lighting fixtures.

**2 Bromur Street, Barre, VT (upper building)**
This is a 3 story apartment building with 6 units and 10 residents. The roof is a gable style with asphalt shingles and a 5/12 pitch. The roof faces nearly NE and SW. The eave of the roof is approximately 30 ft. above ground level. General scope of work includes: installation of solar DHW system, replace boiler and upgrade lighting fixtures.

**11 Bailey Street, Montpelier, VT**
This is a 3 story historic building with 5 apartments and 7 residents. It has a flat roof and is approximately 35 ft above ground level. General scope of work includes: window replacement, replace bathroom exhaust fans, site grading and drainage, installation of solar DHW system, general air sealing and weather stripping, construction of attic hatches, cellulose and spray foam insulation and upgrade lighting fixtures.

**37 Barre Street, Montpelier, VT**
This is a 3 story historic building with 4 apartments and 7 residents. The building also serves one commercial business. The front part of the building has a flat roof approximately 25 ft above ground level. The back of the building has a gable roof with asphalt shingles, 5/12 pitch and faces SE-NW. General scope of work includes: window replacement, replace existing bathroom exhaust fans, installation of solar DHW system, cellulose and spray foam insulation and upgrade lighting fixtures.

**ARRA-SEP GRANTS**

This project is funded by the American Recovery and Reinvestment Act of 2009, (ARRA) through a grant from the State of Vermont, Department of Public Service, and as such the following federal and state rules and regulations apply.

- Federal Labor Standards including the Davis-Bacon Act, Contract Work Hours and Safety Standards Act, Copeland "Anti-Kickback" Act, and Copeland Anti Kick Back Act

- Applicable Equal Opportunity Laws and Executive Orders, Including the Fair Housing Act, Civil Rights Act of 1964, Age Discrimination Act of 1973, Fair Employment Act, Americans with Disabilities Act, Executive Order 11246 (Equal Employment Opportunity), and Title 21 V.S.A., Chapter 5, Subchapter 6, related to fair employment practices.

- AARA Reporting Requirements: With each payment request, Contractor shall submit data on hours worked and hourly wage by trade category, as well as information on weather the work was preformed by existing employees of the contractor or if the employee was hired by the contractor in order to perform the work covered on the contract.

Additionally, contractors will be required to provide certificates of insurance for workers compensation, general liability, property damage and automotive liability insurance subject to the terms and limits set forth by the State of Vermont.

**Women and minority-owned business and small, locally owned business encouraged to apply.**

Bidders may request a copy of detailed contract provisions from:
Alison Friedkin at CVCLT - 802-476-4493, ext 214

## Information for Bidders

The project will be awarded as one lump sum. All bids must be made on the enclosed bid form. The Owner reserves the right to reject any bid for any reason it deems to be in its best interest.

Please respond to the following criteria in your submission.

1. The firm's or teams experience with multifamily renovations.
2. Experience with historic renovation projects that comply with the Secretary of the Interior's "Standards for Rehabilitation of Historic buildings".
3. Experience with expedited project delivery. Demonstrated ability to deliver projects of similar scope on or ahead of schedule.
4. Experience with state and federally funded projects.
5. Experience with Davis Bacon Labor Standards and other federal requirements.
6. Personal assigned to project.
7. Demonstrated performance of warranty period service requirements. Client references regarding responsiveness.

Competitive responses will concisely document performance on at least three similar projects in the past 5 years and provide owner references to substantiate specific details relating to schedule, budget quality, compliance with federal regulations and historic preservation and the ease of the overall development process.

The Owner reserves the right to reject any subcontractor where an investigation of the available evidence or information does not satisfy the Owner that the subcontractor is qualified to carry out the contract.

General Conditions

Contractor shall be responsible for obtaining all permits for all trades necessary to complete the work described in this RFP, including all fees and inspections.

Shop Drawings: Contractor shall submit shop drawings on all materials for approval by the owner.

Cutting and patching: Contractor shall be required to do all cutting and patching required for the completion of the work, including all trades. Firecaulk all penetrations through fire-rated assemblies. Air seal all penetrations through thermal barriers.

The successful bidder will be required to sign CVCLT's standard base contract.

All construction shall follow normal construction practice, and comply with state and local codes Start up, commissioning and training: Provide factory recommended procedures for start up of all system elements. Provide 8 hours of commissioning and training time to instruct CVCLT's staff, and show evidence that system is installed correctly and functioning properly.

## Bid Form

1 Bromur Street, Barre

2 Bromur Street, Barre

11 Bailey Street, Montpelier

37 Barre Street, Montpelier

To: Alison Friedkin

Central Vermont Community Land Trust

107 N Main St., Barre, VT 05641

Date:

General Contractor:

The undersigned propose to furnish all labor, materials and equipment as necessary for the work at the below listed properties.

1 Bromur Street, Barre

Lump sum _____ (written)

_____ (figures)

2 Bromur Street, Barre

Lump sum _____ (written)

_____ (figures)

11 Bailey Street, Montpelier

Lump sum _____ (written)

_____ (figures)

37 Barre Street, Montpelier

Lump sum _____ (written)

_____ (figures)

Note: The following forms need to be completed and submitted with bid form.

1. Certificate Regarding Debarment, Suspension Ineligibility and Voluntary Exclusion (http://www.usda.gov/rus/water/ees/englib/pdf/usda1048.pdf)
2. Disclosure of Lobbying Activities (http://www.whitehouse.gov/sites/default/files/omb/grants/sflllin.pdf)
3. Certification for Contracts, Grants, Loans and Cooperative Agreements (http://www.vhcb.org/pdfs/homehandbook/8c3.pdf)
4. Bid Bond Form

The undersigned further agrees to hold his/her bid open for sixty days after bid opening.

Signature: _____ Name: _____

# DAVIS BACON ACT

The Davis-Bacon Act requires that all contractors and subcontractors performing on federal contracts (and contractors or subcontractors performing on federally assisted contracts under the related Acts) in excess of $2,000 pay their laborers and mechanics not less than the prevailing wage rates and fringe benefits listed in the contract's Davis-Bacon wage determination for corresponding classes of laborers and mechanics employed on similar projects in the area. Davis-Bacon labor standards clauses must be included in covered contracts.

Apprentices may be employed at less than predetermined rates if they are in an apprenticeship program registered with the Department of Labor or with a state apprenticeship agency recognized by the Department. Trainees may be employed at less than predetermined rates if they are in a training program certified by the Department.

Contractors and subcontractors on prime contracts in excess of $100,000 are required, pursuant to the Contract Work Hours and Safety Standards Act, to pay employees one and one-half times their basic rates of pay for all hours over 40 worked on covered contract work in a workweek. Covered contractors and subcontractors are also required to pay employees weekly and to submit weekly certified payroll records to the contracting agency.

CFR - Code of Federal Regulations Pertaining to U.S. Department of Labor

Title 29 - Labor

Chapter I - Office of the Secretary of Labor

Part 5 - Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (Also Labor Standards Provisions Applicable to Nonconstruction Contracts Subject to the Contract Work Hours and Safety Standards Act

Subpart A- Davis-Bacon and Related Acts Provisions and Procedures

29 CFR 5.5 - Contract provisions and related matters.

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**(a)** The Agency head shall cause or require the contracting officer to insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in Sec. 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, Provided, That such modifications are first approved by the Department of Labor):

**(1) Minimum wages.**

**(i)** All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in Sec. 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

**(ii)**

**(A)** The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

**(B)** If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

**(C)** In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

**(D)** The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

**(iii)** Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

**(iv)** If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

**(2) Withholding.**

The (write in name of Federal Agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics,

including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

**(3) Payrolls and basic records.**

**(i)** Payrolls and basic records relating thereto shall be aintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

**(ii)**

**(A)** The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency). The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at: http://www.dol.gov/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of

payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency), the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

**(B)** Each payroll submitted shall be accompanied by a ``Statement of Compliance,'' signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under Sec. 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under Sec. 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

**(C)** The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the ``Statement of Compliance'' required by paragraph (a)(3)(ii)(B) of this section.

**(D)** The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

**(iii)** The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the (write the name of the agency) or the Department of Labor, and shall permit such

representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

**(4) Apprentices and trainees.**

**(i)** Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

**(ii)** Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan

approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

**(iii)** Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

**(5) Compliance with Copeland Act requirements.**

The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

**(6) Subcontracts.**

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the (write in the name of the Federal agency) may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

**(7) Contract termination: debarment.**

A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

**(8) Compliance with Davis-Bacon and Related Act requirements**.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

**(9) Disputes concerning labor standards.**

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

**(10) Certification of eligibility.**

**(i)** By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

**(ii)** No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

**(iii)** The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

**(b) Contract Work Hours and Safety Standards Act.**

The Agency Head shall cause or require the contracting officer to insert the following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Sec. 5.5(a) or 4.6 of part 4 of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

**(1) Overtime requirements.** No contractor or subcontractor contracting for any part of the conract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

**(2) Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth inparagraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

**(3) Withholding for unpaid wages and liquidated damages.** The (write in the name of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

**(4) Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

**(c)** In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in Sec. 5.1, the Agency Head shall cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Agency Head shall cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

GENERAL DECISION: VT20100004 03/12/2010 VT4

Date: March 12, 2010
General Decision Number: VT20100004 03/12/2010

Superseded General Decision Number: VT20080004

State: Vermont

Construction Type: Residential

County: Washington County in Vermont.

RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including four stories).

Modification Number Publication Date
0 03/12/2010

* SUVT1990-001 01/19/1990

| | Rates | Fringes |
|---|---|---|
| Carpenter | $ 7.25 | |
| Cement mason | $ 8.55 | |
| Electrician | $ 7.25 | |
| Insulator/asbestos worker | $ 7.25 | |
| Laborer, general | $ 7.25 | |
| Painter | $ 7.25 | |
| Plumber | $ 7.25 | |
| Power equipment operators: | | |
| _Backhoe | $ 7.25 | |
| _Bulldozer | $ 7.25 | |
| Roofer | $ 7.25 | |
| Truck driver | $ 7.25 | |
| Drywall hanger | $ 7.25 | |

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.
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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a)(1)(ii)).

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In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

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## WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division

U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

**Vermont Act 193**

Beginning January 1, 2010, no person shall sell or offer for sale in or into the state of Vermont, or use in the state of Vermont, solder or flux for plumbing containing more than 0.2 percent lead, or plumbing fixtures whose wetted surfaces contain more than a weighted average of 0.25 percent lead. Extracted from the ACT of the general assembly No. 193

Please require that all plumbers selected in the bidding process acknowledge they are familiar with the provisions of Act 193, and that any and all work performed and materials and fixtures used will comply. Plumbers should request their suppliers to certify any materials and fixtures sold are in compliance. In the simplest form, this may mean keeping the product description that comes with the fixture that shows lead content to be lower than the .25% threshold. It may also be a letter or other certification the vender can supply indicating they are aware of Act 193 and that all materials sold by them comply.

**Insurance Requirements**

Before commencing work, the Contractor must provide certificates of insurance to show that the following minimum coverages are in effect. It is the responsibility of the Contractor to maintain current certificates of insurance on file with CVCLT through the term of the contract. No warranty is made that the coverages and limits listed herein are adequate to cover and protect the interests of Contractor for Contractor's operations. These are solely minimums that have been established to protect the interests of the Central Vermont Community Land Trust, VFEP and the State of Vermont. Contractor and its Vendors shall provide certificates of insurance with the following limits and coverages:

*Workers Compensation*: With respect to all operations performed, Contractor and its Vendors shall carry workers' compensation insurance in accordance with the laws of the State of Vermont.

*General Liability and Property Damage*: With respect to all operations performed under the contract, the Contractor and its Vendors shall carry general liability insurance having all major divisions of coverage including, but not limited to:

Premises - Operations

Products and Completed Operations

Personal Injury Liability

Contractual Liability

The policy shall be on an occurrence form and limits shall not be less than:

$1,000,000 Per Occurrence

$1,000,000 General Aggregate

$1,000,000 Products/Completed Operations Aggregate

$ 50,000 Fire/ Legal/Liability

Contractor and its Vendors shall name the Central Vermont Community Land Trust and State of Vermont and its officers and employees as additional insureds for liability arising out of this Agreement.

*Automotive Liability:* Contractor and its Vendors shall carry automotive liability insurance covering all motor vehicles, including hired and non-owned coverage, used in connection with this Agreement. Limits of coverage shall not be less than: $1,000,000 combined single limit. Amendments to Vendor automotive liability limits may be requested through VFEP to the State of Vermont.

**New EPA rules**

New EPA rules that require additional training for all Contractors doing work that will disturb surfaces on buildings that are pre 1978. Contractors must have additional 8hr training and receive certification in order to perform work. There are also addition requirements that require all fixtures to be completely lead free. Some existing fixtures currently on shelves may still contain minute levels of lead. All fixtures will need to be completely lead free. It is important to obtain the training by the deadline in APRIL 2010. Contractors must meet this requirement and provide a certificate prior to beginning the work. They will also need to provide proper documentation during and after completion of work.

**Labor**

Worker Behavior: All workers shall conduct themselves in a respectful and professional manner at all times while on the jobsite. Workers shall refrain from using offensive language. All workers shall show respect for neighbors and residents. Failure to maintain an acceptable standard as determined by the Owner is grounds for dismissal of individuals or termination of contract.

**Smoking**

Smoking is not permitted within the building(s). Cigarette butts must be disposed of properly and not left on the property.

**Waste Management Plan**

The Contractor shall complete a Waste Management Plan, see Attachment A. The Waste Management Plan shall describe the Contractor's plan to dispose of any sanitary or hazardous waste (e.g. including but not limited to: construction and demolition debris, old light bulbs, lead ballasts, piping, roofing material, discarded equipment, debris, and asbestos). The Contractor shall ensure that the project is in compliance with all Federal, state and local regulations for waste disposal. The Contractor shall make the waste management plan and related documentation available to CVCLT. All efforts should be made to recycle construction material and reduce the waste stream.

# Solar Water Heating System Specification

**Schedule of Work -** 1 Bromur Street, Barre; 2 Bromur Street, Barre; 11 Bailey Street, Montpelier and 37 Barre Street, Montpelier

## PART 1 GENERAL

The objective of this specification is to describe a system which uses solar energy to preheat service hot water. One qualified contractor, who must be a partner in the Vermont Solar & Wind Partnership, will be selected to provide all labor, supervision, equipment, tools, materials and incidentals necessary to design, install, test and commission the complete solar water heating system. The system shall operate in conjunction with the building's plumbing systems. It is the responsibility of the solar partner to complete all paperwork and applicable forms to receive the Vermont state rebate.

### 1.1 SYSTEM DESCRIPTION

#### 1.1.1 Design Requirements

Design, furnish and install a new, closed loop, solar water heating system (SWH) for the heating of domestic water using roof-mounted, liquid flat plate solar collectors. The solar water heating system shall offset the use of natural gas, propane, oil or electricity by preheating water before the conventional domestic hot water system. System types incorporating both freeze-protection and overheat protection are required. Supplied equipment must be rated and warranted to withstand and operate under lowest-record-low and highest-record-high temperature for the location. The type of system control may be either by hard wiring to a small photovoltaic panel which drives a DC pump with linear booster or by use of a temperature differential sensor and controller. The following design requirements apply:

A. Provide a separate solar water heating system for each building unit designated.
B. System tilt angle mounted facing due south at a tilt of approximately 40 degrees.
C. Provide for freezing ambient conditions and highest temperature conditions
D. Provide for stagnation conditions and when there is excess hot water produced
E. System must be simple and easy to maintain by design
F. System must have automatic operation not requiring operator intervention
G. System design should keep DHW recirculation lines clear from solar storage system.
H. Optionally, include a monitoring system to measure system performance.
I. Design shall include system components that consist of solar collectors, manifolds, storage tank, interconnecting piping and fittings, necessary controls, heat exchangers, pump(s) with hard wired photovoltaic panel or in-line power, pressure relief, tempering and balancing valves, sensors and controller, expansion tank, as well as all other accessories and equipment required for completion and proper operation of the solar water heating system.

1.1.2 Performance Requirements

A. Solar water heating systems must be safe, reliable, require no operator intervention for normal operation, be visually unobtrusive, and be designed and installed in accordance with all applicable codes.
B. Install solar domestic hot water panels on the building in a location and manner that is acceptable to historic preservation requirements.
C. Design and size the system so that solar energy supplies the amount of heat that minimizes life cycle cost, but not less than 50 percent of the annualized hot water demand @ 15 gpd/person . The peak output of the solar hot water system shall be sized to equal the expected peak summer demand for domestic hot water.
D. Solar Storage should be sized so that we have at least 1.5 gallons of storage for every 1 square foot of collector. Do not include the boiler fired indirect tank. In systems of lower angle (summer optimized), more storage is advisable. Provide a detailed analysis using manufacturer specifications.
E. Only closed loop glycol systems.
F. Estimated incoming cold water temperature and hot water delivery temperature
G. Include with the system all labor, supervision, equipment inside and outside the building, tools, materials and incidentals necessary to design, procure, install, check/commission and place into operation, a complete solar water heating system ready for use in the building.

1.2 SUBMITTALS

Submit the following.

A. Commercial Products Data with Performance Charts and Curves
B. Annotate descriptive data to show the specific model, type, and size of the item.
C. Provide SRCC Ratings specified for selected collectors and systems

1.2.1 Solar System Design

A. Submit a complete description of the design of the system, including drawings, specifications, wind load and flow calculations and written narrative.
B. Submit calculations of solar system performance leading to the proposed design. Include mechanical, electrical and structural drawings and specifications in sufficient detail for construction of the system.

1.2.2 Statements

Prior to installation, submit data showing that the contractor has successfully designed and installed systems of the same type and design as specified herein and proposed by the contractor and has support from the original collector and component manufacturer(s) during all phases of the project.

1.2.3 Drawings

A. Provide drawings for the system type and size containing a system schematic;
B. A collector layout and roof plan noting reverse-return piping for the collector array;
C. A system elevation;
D. A schedule of operation and installation instructions;
E. A schedule of design information including collector height and width, gross area of collectors, collector filled weight, weight of support structure, and tilt angle of collectors from horizontal.
F. Include in the drawings, complete wiring and schematic diagrams, proposed pipe pitch, expansion tank, and any other details required to demonstrate that the system has been coordinated and will properly function as a unit.
G. Show proposed layout and anchorage of equipment and appurtenances, and equipment relationship to other parts of the work, including clearances for maintenance and operation.
H. Provide a detail of the joint connection between the solar collector mounting brackets and the roof membrane.

1.2.4 Instructions

Submit instructions, in typed form, explaining preventive maintenance procedures,

methods of checking the system for normal safe operation and procedures for safely starting and stopping the system, methods of balancing and testing flow in the system, and methods of testing for control failure and proper system operation.

1.2.5 Operating and Maintenance Manuals

A. Submit manuals that detail the step-by-step procedures required for system filling, startup, operation, and shutdown. Include in the manuals the manufacturer's name, model number, service manual, parts list, and brief descriptions of all equipment and their basic operating features.
B. List routine maintenance procedures, possible breakdowns and repairs, recommended spare parts, troubleshooting guides, piping and equipment layout,
Glycol fluid replacement procedure, and simplified wiring and control diagrams of the system as installed.

**PART 2 PRODUCTS**

2.1 GENERAL EQUIPMENT REQUIREMENTS

2.1.1 Standard or Pre-approved Products

Furnish materials and equipment that are the standard products of a manufacturer regularly engaged in the manufacture of such products. At a minimum, solar collectors are required to be SRCC OG-100 certified and score high on the SRCC OG-100 Clear C rating. The Vermont State incentive is based on the Clear C rating.

The following is a suggested list of equipment for the major components used in the solar system, by major component. **Other components and packaged systems will be considered if equal.**

- Solar Liquid Flat Plate Collectors
  - Heliodyne - Gobi 408-001 and 410-001
  - SunEarth – EC-24, EC-32 and EC-40
  - Viessmann - Vitosol 200F
  - Bosch –FKB, FKC, FKT
  - Stiebel Eltron- Sol 25 Plus
  - Thermo-Dynamics G Series
  - Alternate Energy Technologies (AET) – All
  - Shuco - Premium

- Solar Pump Stations
  - Caleffi - series 255 - 256
  - TAKO – SPS-PC-1
  - Heliodyne – HPAK
  - Viessmann- Solar-Divicon
  - Bosch – KS
  - Thermo-Dynamics: Solar Boiler

- Solar Controllers
  - Caleffi
  - Heliodyne Delta T
  - Viessmann – SCU###
  - Bosch TR0603mcU
  - PAW

- Solar Storage – SRCC OG-300 Certified

  Two categories

- Stainless (preferred)
  - HTP - Superstore Ultra
  - Triangle Tube – SME series
- Glass lined (Value choice)
  - HTP – Superstore Contender
  - Stiebel Eltron – SB and SBB
  - Caleffi Solarflex insulated stainless steel piping w/ insulation.
  - Rheem Solaraide HE

- Heat Transfer Fluids:

  - Solution of propylene glycol U.S.P. and distilled water as recommended by manufacturer of system components with freeze (burst) protection to -30 degrees F.

2.1.2 Nameplates

Secure to the major item of equipment, the manufacturer's name, address, type or style, model or serial number.

2.2 PIPING SYSTEM

Provide a piping system complete with pipe, pipe fittings, valves, strainers, expansion loops hangers, inserts, supports, anchors, guides, sleeves, and accessories with this specification and the drawings. Provide, install and test the piping. Provide piping flow rates below 5 feet per second. Piping shall be Type L or M copper tubing, with tin-antimony soldered joints or pre-insulated stainless steel piping.

2.2.1 Pipe Insulation

A. Furnish interior pipe insulation and coverings such as Armaflex, Insul-Tube, Rubatex, or approved equivalent.
B. Provide outside array piping insulation with a capability of withstanding 250 degrees F, except that piping insulation within 1.5 feet of collector connections shall be capable of withstanding 400 degrees F.
C. Protect outside piping insulation from water damage and ultraviolet degradation with a suitable outer coating manufactured for this purpose (aluminum, sunlight resistant PVC or approved equal).

2.2.2 Pressure Gauges

Provide pressure gauges with throttling type needle valve or a pulsation dampener and shutoff valve. Furnish a 3-1/2 inch minimum dial size.

2.2.3 Thermometers

Supply thermometers with wells and separable bronze sockets.

2.2.4 Pipe Hangers and Supports

Support and hang piping so that the weight of the piping is not supported by drywall , siding, or other building members not designed to bear load. Support piping so that thermal expansion and contraction of pipe lengths is accommodated.

2.2.5 Valves

Provide valves compatible with the piping. Ball valves shall be used for shutoff, with full port, bronze body, bronze ball and Teflon seat. Bronze hose-end gate valves shall be used for draining low points of piping. If systems are proposed with multiple collector banks, provide balancing valves suitable for 125 psig and 250 degrees F service. The balancing valves are specified to allow the arrays to be flow balanced. Furnish balancing valves with bronze body/brass ball construction with seat rings compatible with system.

2.3 COLLECTOR SUBSYSTEM

2.3.1 Solar Collector Construction

The type of solar collector proposed shall be compatible with the proposed system type:

A. Absorber plate shall be coated with high efficient selective coating which ensures maximum radiation absorption and minimize thermal radiation losses.

B. Heat transfer fluid shall be non-toxic glycol based
C. All supporting structures including bolts and nuts shall be stainless steel
D. Collectors should be liquid flat plate type.
E. Furnish collectors of weather-tight construction and with stainless steel mounting brackets and hinges.
F. Furnish stainless steel assembly hardware including all bolts, washers, and nuts.

2.3.2 Collector Warranty

Provide a minimum 10 year collector warranty against the following: failure of manifold or riser tubing, joints or fittings; degradation of absorber plate selective surface; rusting or discoloration of collector hardware; and embrittlement of header manifold seals. Include with the warranty full repair or replacement of defective materials or equipment.

2.3.3 Solar Collector Performance

Indicate the manufacturer's recommendations for the number of collectors to be joined per bank while providing for balanced flow and for thermal expansion considerations.

2.4 SOLAR COLLECTOR ARRAY

2.4.1 Net Absorber Area and Array Layout

Collector array shall be oriented so that all collectors face the same direction.

Space collectors arranged in multiple rows so that no shading from other collectors is evident between 1000 hours and 1400 hours solar time on December 21. Indicate minimum spacing between rows.

2.4.2 Piping

Connect interconnecting array piping between solar collectors, in a reverse-return configuration with approximately equal pipe length for any possible flow path. Indicate flow rate through the collector array.

2.4.3 Supports for Solar Collector Array

A. Provide support structure for the collector array of stainless steel. Furnish a support structure, which secures the collector array at the proper tilt angle with respect to horizontal and orientation with respect to true south.
B. The collector tilt angle shall vary by not more than +/- 25 degrees from the angle of the local latitude, and the azimuthal angle may vary by not more than +/-45% from due true south.
C. Provide a support structure that will withstand the static weight of filled collectors and piping, snow loads, wind, seismic, and other anticipated loads without damage.
D. Provide structural reinforcement for the roof as necessary to accommodate the additional loads imposed by the solar water heating system. Provide a support structure, which allows access to all equipment for maintenance, repair, and replacement.
E. Neoprene or EPDM washers shall separate all dissimilar metals.

2.5 SOLAR PREHEAT STORAGE TANK

Provide a cylindrical thermal energy storage solar tank with a storage capacity of 120 gallons or less. Solar storage should be sized for at least 1.5 gallons of storage for every 1 square foot of collector. Larger, ASME stamped tanks may be considered on a case by case basis. Expansion tanks shall be installed on the DHW piping to reduce pressure related stresses to the storage tank(s). Provide a tank rated at 100 lb/in$^2$ at 190 degrees Fahrenheit. Tank and pump system to include tank overheating protection.

## 2.6 HEAT TRANSPORT SUBSYSTEM

### 2.6.1 Heat Exchanger

As required by the approved system, use tank(s) with heat exchanger such as listed in section 2.1.1 above or equivalent. Set tank to charge to a maximum of 203 degrees or maximum allowable by manufacturer. Furnish heat exchanger with a capability of withstanding temperatures of at least 240 degrees F.

### 2.6.2 Pump Station

Provide a pump station as specified in section 2.1.1. above or equivalent. If applicable to the approved system, set system pump on when collectors are 12 degrees warmer than tank and system pump off when collectors are 6 degrees warmer than tank.

### 2.6.2 Heat Transfer Fluid

Heat transfer fluid shall be compatible with all materials in the system. The nature and amount of heat transfer fluid will depend on the type of system proposed. Any conditioners or corrosion inhibitors added to the heat transfer fluid must be non-toxic and acceptable as per the manufacturer's recommendations.

## 2.7 CONTROL AND INSTRUMENTATION SUBSYSTEM

### 2.7.1 Differential Temperature Control Equipment

As required by the approved system design, furnish the control equipment as a system from a single manufacturer:

Furnish a solid-state electronic type controller complete with an integral transformer to supply low voltage.

A. Supply controllers that are compatible with the temperature sensors. Controller accuracy shall be plus or minus 1 degree F. Supply controls with a visual indicator when pumps are energized and recording capabilities.
B. Supply a controller capable of identifying open and short circuits on both the solar collector temperature sensor circuit and the storage tank sensor circuit.
C. Controllers with energy output data monitoring capabilities are preferred.

### 2.7.2 Temperature Sensors

As required by the approved system design, provide temperature sensors that are compatible with the differential temperature controller. Temperature sensors shall be mechanically attached to the surface they are measuring and wire to the sensor must be mechanically attached and protected along its length.

2.7.3 Tempering Valve

Systems must have a tempering or mixing valve to limit the temperature of the hot water supplied to the plumbing fixtures.

2.8 PAINTING AND FINISHING

Furnish equipment and component items, with the factory applied manufacturer's standard finish.

**PART 3 EXECUTION**

3.1 INSTALLATION

A. Install piping straight and true to bear evenly on hangers and supports. Do not hang piping from sheet rocks or suspended ceilings.
B. Keep interior and ends of new piping thoroughly cleaned of foreign matter. Keep piping systems clean during installation by means of plugs or other approved methods.
C. Discharge storage tank pressure and temperature relief valves into floor drains as necessary.
D. Provide air vents with threaded plugs or caps.
E. Install control and sensor wiring in conduit.

3.1.1 System Flushing and Disinfection

Flush and disinfect the piping system.

3.1.2 Collector Subsystem

3.1.3 Collector Array

Install solar collector array at the proper tilt angle, orientation, and elevation above roof. Install the solar collectors with the ability to be removed for maintenance, repair, or replacement.

3.1.4 Array Piping

Install collector array piping in a reverse-return configuration so that path lengths of collector supply and return are of approximately equal length. Install air vents in the high points of the collector array piping. Provide proper pitch for draining of collector array.

3.1.5 Array Supports

Install array support system/racking in accordance with the recommendations of the collector manufacturer.

3.1.6 Pipe Expansion

Provide for the expansion and contraction of supply and returns. Do not use expansion joints in the system piping.

3.1.7 Valves

Ball valves shall be used for shutoff, with full port, bronze body, bronze ball and Teflon seat. Bronze hose-end gate valves shall be used for draining low points of piping. Install a back flow preventer and tempering valve to control hot water delivery temperature. Install ball valves to isolate storage tank from pump to allow for isolation, draining and flushing of tank.

3.1.8 Roof Penetrations

All roof penetrations shall be made permanently waterproof. Contractor shall coordinate work with the current warranty of the existing new roof and install rack system as per manufacturer's recommendations.

3.2 INSPECTION AND TESTING

3.2.1 Instructions

A. Provide instructions for the system type. Include in these instructions a system schematic, and wiring and control diagrams showing the complete layout of the solar system.
B. Prepare condensed operating instructions explaining preventative maintenance procedures, balanced flow rates, methods of checking the system for normal safe operation, and procedures for safely starting and stopping the system, in typed form, framed as specified above, and posted beside the diagrams.
C. Post the framed instructions before acceptance testing of the system.

3.2.2 Acceptance Testing and Final Inspection

Maintain a written record of the results of all tests, to be submitted in booklet form. Provide the following tests:

3.2.3 Hydrostatic Test

Hydrostatically test the system.

3.2.4 Operational Test

Operationally test the system over a period of 48 consecutive hours with sufficient solar insolation to cause activation of the solar energy system during daylight hours.

3.2.5 Overall System Operations

Demonstrate the solar energy system will operate properly while unattended for a period of at least 72 hours. As required by system design, demonstrate the system controller will start the

pumps after being warmed by the sun, and that it will properly shut down during cloudy weather or in the evening over a minimum of three complete cycles. It is permissible to manipulate the temperature of the storage tank by the introduction of cold water. Employ night time heat dumping through panels if available through controller.

3.2.6 Temperature Sensor Diagnostics

As required by system design, demonstrate the controller will correctly identify open and short circuits on both the solar collector temperature sensor circuit and the storage tank sensor circuit.

3.3 FIELD TRAINING

Provide a field-training course for operating and maintenance staff members after the system is functionally complete. Include in the training a discussion of the system design and layout and demonstrate routine operation, maintenance and troubleshooting procedures.

## High-Efficiency Boiler, Domestic Hot Water Specification

**Schedule of Work -** 1 Bromur Street, Barre; 2 Bromur Street, Barre

GENERAL

Note: **The Scope of Work includes 2 boilers one in each building**. All piping and equipment must meet all appropriate codes and when applicable follow the manufactures recommended best practices. These are minimum project standards and give way to stricter requirements either in code or in other sections.

**Heating System**

1. Remove, dispose of , and replace existing hot water boiler system, including boiler, domestic hot water storage tank ,fuel oil filter, smoke pipe, expansion tanks, zone controls, fresh water feeder valves, back flow preventer, and isolation valves
2. Upgrade safety equipment to meet or exceed code minimums (including but not limited to electrical and fuel shut-offs, pressure relief equipment, etc.).
3. Where possible, install isolation and purge valves to independently fill and drain distribution zones.
4. Install two (1) oil-fired boilers that shall be ENERGY STAR® labeled* (www.energystar.gov) with an Annual Fuel Utilization Efficiency (AFUE) of 86.0% or greater. Each boiler shall be sized to provide 100% of building load.
5. Heating system sizing is based on Manual J calculations or equivalent, calculated at post insulation and air sealing improvements. (Buildings with heating loads larger than 250,000 Btu/hr use staged multiple or modulating boilers.) **Upper Building 117,000 BTU, Lower building 211,00**0
6. In multiple boiler systems, boilers shall be piped with primary/secondary piping to prevent flow through "off line" boilers (see Figure 1, p. 3). Provide valves to allow independent isolation of each boiler from each other and the distribution system for maintenance.
7. Primary and secondary heat loops shall be high efficiency ECM (also known as "brushless DC") -powered circulator pumps.
8. Boilers shall be provided with ducted combustion air, ducted directly from outdoors to the burner. The combustion air requirements of the boiler are separate from the building and there is no chance of back drafting.
9. Boilers shall have microprocessor controls programmed to:
    a. Stage boilers
    b. Alternate lead/lag
    c. Modulate boiler water temperature based on outside temperature ("outdoor reset" control)
    d. Shut off the primary circulator when outside temperature rises above 70 degrees F.

10. Thermostats shall be installed for each zone with maximum set point of 72F. Thermostats shall not contain mercury.
11. All hot water hydronic distribution piping shall be insulated to the following ASHRAE standards:
    - **a.** Nominal pipe diameter <= 1.5" has minimum 1" insulation
    - **b.** Nominal pipe diameter > 1.5" has minimum 2" insulation
    - **c.** Pipe insulating values shall be based on material with insulating value of R-3.7 per inch (conductivity not exceeding 0.27 Btu per inch/h/ft²/°F)

**Domestic Hot Water System**

1. Domestic hot water (DHW) shall be provided by a central indirect-fired water heater(s) off the central boiler(s). DHW tanks have insulation with a minimum R-value of R-14.
2. Circulating domestic water heating loops shall be installed only when the run is greater than 50 feet to the furthest tap. Return water only to the boiler indirect-fired hot water tank. (Do not re-circ hot water through the solar preheat-storage tanks)
3. All recirculation loop piping shall be insulated to the following ASHRAE standards:
    a. Nominal pipe diameter <= 1.5" has minimum 1" insulation
    b. Nominal pipe diameter >1.5" has minimum 2" insulation
    c. Pipe insulating values based on material with insulating value

# DOORS

**Schedule of Work -** 1 Bromur Street, Barre (15 doors)

Dispose of door. Install a new fiberglass insulated door with tempered thermo glass and compressing weather stripping to match existing doors. Install new interior and exterior door casing on all doors, prime and paint 2 coats to match existing casing.

Reinstall all locksets and dead-bolts.

PAINT all doors 2 coats to match existing paint, interior and exterior.

MUST MEET ENERGY STAR CRITERIA FOR RESIDENTIAL DOORS

**MANUFACTURES**

**A.** Thermatru Smooth Star (or equivalent)

**CLEANING AND PROTECTING**

1. Remove protective material from factory finished surfaces.
2. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.
3. Remove visible labels and adhesive residue according to manufacturer's instructions.
4. Protect doors from damage by chemicals, solvents, paint or other construction operations that may cause damage.

# ENERGY STAR® Qualification Criteria for Residential Windows, Doors, and Skylights

## Windows

| Climate Zone | U-Factor[1] | SHGC[2] | |
|---|---|---|---|
| Northern | ≤ 0.30 | Any | Prescriptive |
| | =0.31 | ≥ 0.35 | Equivalent Energy Performance |
| | =0.32 | ≥ 0.40 | |
| North-Central | ≤ 0.32 | ≤ 0.40 | |
| South-Central | ≤ 0.35 | ≤ 0.30 | |
| Southern | ≤ 0.60 | ≤ 0.27 | |

[1] Btu/h.ft$^2$.°F

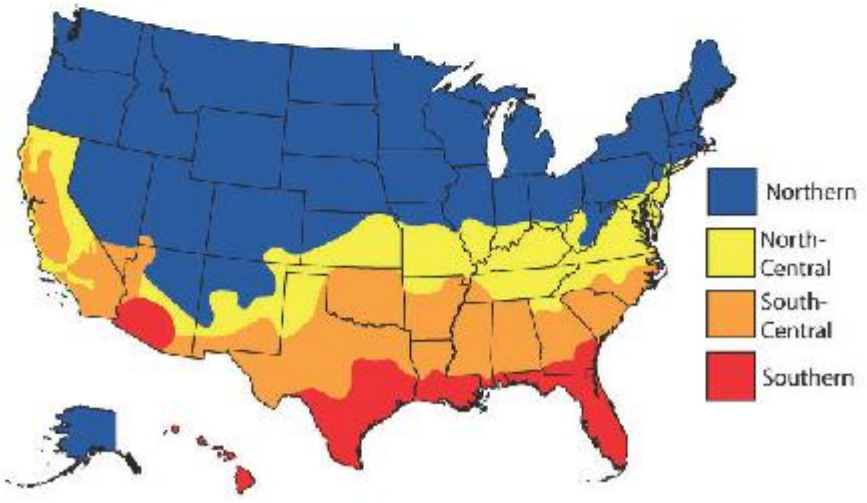
[2] Fraction of incident solar radiation

## Doors

| Glazing Level | U-Factor[1] | SHGC[2] |
|---|---|---|
| Opaque | ≤ 0.21 | No Rating |
| ≤ ½-Lite | ≤ 0.27 | ≤ 0.30 |
| > ½-Lite | ≤ 0.32 | ≤ 0.30 |

## Skylights

| Climate Zone | U-Factor[1] | SHGC[2] |
|---|---|---|
| Northern | ≤ 0.55 | Any |
| North-Central | ≤ 0.55 | ≤ 0.40 |
| South-Central | ≤ 0.57 | ≤ 0.30 |
| Southern | ≤ 0.70 | ≤ 0.30 |



# LIGHTING

**Schedule of Work -** 1 Bromur Street, Barre; 2 Bromur Street, Barre; 11 Bailey Street, Montpelier and 37 Barre Street, Montpelier

All interior and exterior tenant-controlled fixtures are to be replaced with Energy-Star qualified PIN-based or GU-based compact fluorescent lighting fixtures.

Laundry-room light fixtures: Existing 2-lamp T8 fixtures shall either be replaces with or relamped/reballasted to an HPT8 system comprises qualifying "High Lumen" 32W lamps paired with a low ballast factor (0.71-0.78) ballast.

1 Bromur St. (lower building)

**Unit One:**

Kitchen- 2lt 4' ballast & lamp replacement only

Kitchen sink- SLP1210LES Crescent

Living room- 60-2947 Nuvo

Entry- 60-2941 Nuvo

Upstairs hall-60-2941 Nuvo

Bedroom- (x 2) 60-2944 Nuvo

Bedroom closet- (x2) 9862-PCH Lev.

**Unit three:** Same as unit one

**Unit five:** Same as unit one

**Unit seven:**Same as unit one

**Entry to nine & eleven:**

Foyer- 60-2944 Nuvo

Wall next to apt doors- (x4) 60-923 Nuvo

Laundry room- 60-2944 Nuvo ** WSP250I Occ.sen. P&S

**Unit nine A:**

Kitchen- 2lt 4’ ballast & lamp replacement only

Kitchen sink- SLP1210LES Crescent

Living room- 60-2947 Nuvo

Bedroom- 60-2944 Nuvo

Bathroom vanity- S7217 lamp only (x4) Satco

**Unit nine B:**

Kitchen-60-902 Nuvo

Kitchen sink- SLP1210LES Crescent

Living room- 60-2947 Nuvo

Bedroom- 60-2944 Nuvo

Bathroom vanity- S7217 lamp only (x4) Satco

**Unit eleven A:**

Living rm closet-9862-PCH Lev.

Living room- 60-2947 Nuvo

Kitchen- 3lt ballast & lamp replacement only

Bathroom vanity- S7217 lamp only (x4) Satco

Bedroom- 60-2944 Nuvo

**Unit eleven B:**

Living room- 60-2947 Nuvo

Kitchen-60-902 Nuvo

Kitchen sink- SLP1210LES Crescent

Bedroom- 60-2944 Nuvo

Bathroom vanity- S7217 lamp only (x4) Satco

**Unit fifteen:**

Outside front door wall- 60-2206 Nuvo

Entry- 60-2941 Nuvo

Basement living room- 60-2947 Nuvo

Basement LR closet- (x2) 9862-PCH Lev.

Kitchen- 3lt ballast & lamp replacement only

Kitchen sink- SLP1210LES Crescent

Laundry room- 60-2944 Nuvo (x2) ** WSP250I Occ.sen. P&S

Upstairs hall-60-2941 Nuvo

Bedroom- 60-2944 (x2) Nuvo

Bedroom closet- (x2) 9862-PCH Lev.

Bathroom vanity- S7217 lamp only (x4) Satco

Outside back- 60-2206 (x7) Nuvo

Outside front- 5 2lt flood *lamp change only S7274 Satco

**Unit seventeen:** Same as unit 15, no laundry

**Unit nineteen:** Same as unit 15, no laundry

**Unit twenty one:** Same as unit 15,no laundry & no living room fixture

<u>2 Bromur St. (upper building)</u>

Laundry hall: 60-2944 Nuvo, wraps (x2) no change

Outside front & back wall: 60-2206 (x6) Nuvo

Entry to units 4,6,10,12 (x2) 60-2941 Nuvo

**Unit two:**

Kitchen-60-902 Nuvo

Kitchen sink- SLP1210LES Crescent

Living room- 60-2947 Nuvo

Upstairs hall-60-2941 Nuvo

Bathroom vanity- S7217 lamp only (x4) Satco

Bedroom- 60-2944 (x2) Nuvo

**Unit four:** Same as unit two

**Unit six:**

Top of stairs closet-9862-PCH Lev.

All else is the same as unit two

**Unit eight:** Same as unit two

**Unit ten:**

Kitchen-60-902 Nuvo

Kitchen sink- SLP1160LES Crescent

Living room- DO NOT CHANGE

Bedroom- 60-2944 Nuvo

Bedroom closet- 9862-PCH Lev.

**Unit twelve:** Same as unit ten except change LR fixture 60-2947 Nuvo

<u>37 Barre Street</u>

Lower & upper back porch: 60-2542 (x3) Nuvo

**Unit one:**

Living room- 60-2947 Nuvo

Kitchen-60-902 (x2) Nuvo

Bedroom- 60-2944 Nuvo

Bathroom wall- 60-922 Nuvo

Bathroom-60-2941 Nuvo

**Unit two:**

Outside door- 60-2941 Nuvo

Kitchen-60-902 (x2) Nuvo

Bedroom- 60-2944 Nuvo

Bathroom-60-2944 Nuvo

**Unit three:**

Outside porch- 60-2542 Nuvo

Stair entry- 60-2941 (x2) Nuvo

Kitchen-60-902 Nuvo

Kitchen sink- SLP1160LES Crescent

Bath hall- 60-2941 Nuvo

Bathroom wall- 60-922 Nuvo

Bathroom-60-2941 Nuvo

Inside hall- 60-2941 (x2) Nuvo

Living room- 60-2947 Nuvo

Bedroom- 60-2944 (x2) Nuvo

**Unit four:**

Living room- 60-2947 Nuvo

Living room closet-9862-PCH Lev.

Kitchen-60-902 (x2) Nuvo

Bedroom- 60-2944 Nuvo

Bathroom wall- 60-922 Nuvo

Bathroom-60-2941 Nuvo

Bedroom closet- 9862-PCH Lev.

11 Bailey Street

Common area & foyer-stairs: 60-2944 (x4) Nuvo

Outside wall: 60-2206 (x5) Nuvo

**Unit one:**

Living room- 60-2947 Nuvo

Kitchen-60-902 Nuvo

Kitchen sink- SLP1160LES Crescent

Bedroom- 60-2944 Nuvo

Bathroom-60-2944 Nuvo

**Unit two:**

Living room- 60-2947 Nuvo

Kitchen sink- SLP1160LES Crescent

Kitchen-60-902 Nuvo

Bedroom- 60-2944 Nuvo

Bathroom- 60-922 Nuvo

**Unit three:**

Living room- 60-2947 Nuvo

Hall to LR- 60-2947 Nuvo

Kitchen sink- 60-922 Nuvo

Kitchen-60-902 (x2) Nuvo

Bedroom- 60-2944 (x3) Nuvo

Bathroom- 60-922 Nuvo

Bathroom-60-2941 Nuvo

**Unit four:**

Living room- fan light owner installed. Do Not Remove

Kitchen-60-902 (x2) Nuvo

Kitchen sink-60-922 Nuvo

Bedroom- fan light owner installed. Do Not Remove

Bathroom-60-922 Nuvo

**Unit five:**

Living room- 60-2947 Nuvo

Hall to bathroom- 60-2947 Nuvo

Kitchen sink- 60-922 Nuvo

Kitchen-60-902 (x2) Nuvo

Bedroom- 60-2944 Nuvo

Bathroom- 60-922 Nuvo

Bathroom-60-2941 Nuvo

# WOOD DOUBLE-HUNG TILT INSERT WINDOWS

**Schedule of Work** - 11 Bailey Street, Montpelier (37 windows)

## PART 1 GENERAL

This specification describes desired wood double hung window inserts. All replacement window profiles and lites must match existing original windows and are subject to review and acceptance by the Owner's historic consultant.

### 1.1 SECTION INCLUDES

A. Wood Double-Hung Tilt Windows with Hardware.
B. Glazing.
C. Accessories.

### 1.2 PERFORMANCE REQUIREMENTS

A. Design and Performance Requirements:

1. Preference will be given to Double-hung tilt window insert units which most closely approach, meet or exceed (i.e. has a value lower than) the NFRC 100 U Factor rating of .25
2. In combination with 1.2 (A)(1) above, preference will be given to Double-hung tilt window insert units for south facing elevations, which have a higher solar heat gain coefficient as per NFRC 200 rating.

### 1.3 SUBMITTAL PROCEDURES

A. Product data: submit manufacturer's product catalog data, samples and installation guides.

B. Samples: submit samples including the following:
1. Corner cutaway: submit corner cutaway, including glazing system, quality of construction and specified exterior/interior finishes.
2. Exterior: submit color samples of exterior color finishes.
3. Hardware: submit samples indicating typical hardware finishes.

D. Quality control reporting: submit manufacturer's test results reported by independent laboratory indicating compliance with specified performance and design requirements, as listed in §1.2 Performance Requirements.

1.6 QUALITY ASSURANCE

A. Single Source Responsibility: The window manufacturer is responsible for all components and materials including hardware mechanisms, weather strip, treatment of wood with acceptable wood preservatives, sash and frame members and insulating glass.

B. Regulatory Requirements:
   1. Emergency Escape and Rescue: Units must comply with egress requirements for sleeping units.

1.7 PRODUCT DELIVERY REQUIREMENTS

A. Comply with the product delivery requirements specified by Owner/Contractor.

1.8 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store units in a dry location, off the ground, under cover, protected from weather and construction activities.
B. Prime or seal wood surfaces if more that 30 days between delivery and installation.

1.9 WARRANTIES

A. Workmanship and materials: 5 year limited warranty.

C. Insulating glass: 20-year limited warranty.

**PART 2 PRODUCTS**

2.1 RECOMMENDED MANUFACTURED UNITS

Provide Wood Double-Hung Tilt Window inserts as manufactured by:

A Marvin windows as manufactured by Marvin Windows and Doors of Warroad, Minnesota;
B. Green Mountain windows as manufactured by Green Mountain Window Company of Rutland, VT
C. Bonneville windows as manufactured by Bonneville Windows & Doors of Sainte-Marie de Beauce, QC, CA
D. Or Equivalent

2.2 WOOD DOUBLE-HUNG TILT WINDOW MATERIALS

A. Frame:
   1. Exterior frame members milled from pine, kiln dried and treated with a water-repellent preservative. The frame includes solid one-piece jambs and applied inside sash stops at sides and sill.

2. Interior frame materials to be milled from pine, kiln dried and treated with a water-repellent preservative.
3. Frame shall be provided with jamb extensions. Jamb extensions shall match interior frame
4. Frame shall have an easily tilted top and bottom sash.
5. Frame must have sash lifts.
6. Weatherproofing: weatherstrip located on top and bottom rails, head jamb, top checkrail and bottom stiles.
7. Full Aluminum screen units with fiberglass mesh screening.

B. Sash:
1. Exterior sash materials to be milled from kiln dried pine, and treated with a water-repellent preservative.
2. Interior sash materials to be milled from kiln dried pine and treated with a water-repellent preservative.
3. Top and bottom sash must tilt in from the inside for cleaning purposes
4. Sash must have flush mounted lock(s) with a positive locking mechanism

C. Finish:
1. Exterior finish: Primed and prefinished with low gloss, at least, two component acrylic polyurethane with color matching existing as approved by Contractor/Owner.
2. Interior finish of clear treated pine wood.

D. Glazing:
1. Glass Type:
Configured to most closely meet U=.25 or less/window unit as per NFRC 100

E. Hardware:
1. Self-contained, calibrated block and tackle balance system housed in a foam-backed rigid jamb liner with solid wood inserts. Interior windows shall have coordinating wood inserts in jamb liners.
   a. Lock handles shall be mounted on bottom sash check rail with concealed locking mechanisms in check rail. Lock handles shall operate sash release latches at check rail.
   a. Top sash shall have two flush-mounted tilt latches factory-applied.

F. Weather Stripping:
1. Flexible weather strip at head.
2. Two vertical weather strips located on each jamb liner in contact with top sash stiles.
3. Weather strip at bottom sash check rail.
4. Flexible weather strips at bottom of bottom rail.

G. Screens:

1. Full screen consisting of formed aluminum frames with baked-on acrylic coating
2. Frame finish: matches exterior frame/sash.
3. Screening to be of fiberglass mesh

H. Simulated Divided Lites:
1. Exterior and interior wood muntins adhered to glass with double-coated tape.
2. Pattern: matching existing
3. Finish: matches exterior/interior sash finish
4. Frame between glass to be simulated

**PART 3 EXECUTION**

3.1 INSTALLATION

A. Install windows according to manufacturer's instructions and reviewed shop drawings to ensure proper installation and operation.
B. Install window unit plumb, level and square with no distortion of frame members.
C. Fill perimeter frame to wall opening cavity with insulation.
D. Apply approved sealant for Joint Protection.
E. Do not puncture prefinished exterior. Refer to installation instructions for complete installation recommendations.

3.2 ADJUSTING AND CLEANING

A. Adjust operating sash and hardware to provide tight fit at contact points and at the weather stripping for smooth operation.

B. Remove excess sealant materials and visible labels from glass. Clean glass surfaces promptly after installation.

C. Initiate and maintain all protection and other precautions required to ensure windows are in acceptable condition at time of substantial completion.

# CLAD WOOD DOUBLE-HUNG INSERT WINDOWS

**Schedule of Work** - 37 Barre Street, Montpelier (16 windows)

## 1.01 SUMMARY

This specification describes desired aluminum or fiberglass clad wood double hung window insert replacements. All replacement window profiles and lites must match existing original windows and are subject to review and acceptance by the Owner's historic consultant

A. Section Includes:

1. Clad Wood Double-Hung Tilt window inserts with hardware
2. Glazing, weatherization.
3. Screens and divided lights

## 1.02 PERFORMANCE REQUIREMENTS

A. Window units shall be of standard frame sizes unless otherwise specified.

B. Window units shall be rated, certified, and labeled in accordance with NFRC 100/200

C. Preference will be given to Double-hung tilt window insert units which most closely approach, meet or exceed (i.e. has a value lower than) the NFRC 100 U Factor rating of .25

D. In combination with §1.02 (C) above, preference will be given to Double-hung tilt window insert units for south facing elevations, which have a higher solar heat gain coefficient as per NFRC 200 rating.

## 1.03 SUBMITTALS

A. Submit manufacturer's product literature for all products and accessories furnished.

B. Submit test reports confirming compliance with performance criteria listed in 1.02.

C. Submit color samples of exterior aluminum finish for selection.

## 1.04 QUALITY ASSURANCE

B. Single Source Responsibility: Except for hardware mechanisms and extrusions, the window manufacturer is responsible for fabrication of all components and materials including treatment of wood with acceptable wood preservative, weather strip, insulating glass and sash and frames.

B. Regulatory Requirements:

1. Emergency Egress or Rescue: Comply with requirements for sleeping units of IBC International Building Code and/or local building code.
2. All work shall be completed in accordance with Vermont and Federal EMP/RRP regulations

1.06 DELIVERY, STORAGE AND HANDLING

A. Comply with the manufacturer's recommended storage and delivery requirements

B. Store windows in a dry location, under cover, protected from weather.

1.07 WARRANTIES

B. Workmanship and materials: 10-year limited warranty.

B. Insulating glass: 20-year limited warranty.

**PART 2- PRODUCTS**

2.01 MANUFACTURERS

A. Marvin Ultimate as manufactured by Marvin Windows and Doors of Warroad, Minnesota;
B. Marvin Infinity (Ultrex®) as manufactured by Integrity Windows and Doors, Fargo, North Dakota
D. Bonneville Gold Series as manufactured by Bonneville Doors and Windows of Sainte-Marie, Beauce, QC, CA
F. Or Equivalent

2.02 DOUBLE-HUNG TILT WINDOW MATERIALS

A. Frame:
   8. Exterior frame members milled from pine, kiln dried and treated with a water-repellent preservative. Solid one-piece jambs with integral sash stops at sides and sill. Exterior extruded aluminum or fiberglass frame.
   9. Interior frame materials to be milled from clear treated pine wood and treated with a water-repellent preservative.
   10. Exterior cladding: Extruded aluminum of .050 inch thickness or pultruded reinforced fiberglass.

B. Sash:
   1. Sash shall be composed of two materials either, an extruded aluminum exterior , mechanically bonded to the interior wood substrate or pultruded fiberglass exterior
   2. Top and bottom sash must tilt in from the inside for cleaning purposes.

C. Finish:
1. Exterior aluminum finish or fiberglass: color as selected by the Developer to match existing.
3. Interior finish: Clear treated wood

D. Glazing:

1. Glazing Method:
Insulated, low emissivity glass
2. Glass Type:
Configured to most closely approach, meet or exceed (i.e. has a value lower than) the NFRC 100 U Factor rating of .25.

E. Hardware:
1. Self-contained block and tackle balance system housed in rigid jamb liner. Block and tackle balance housing colors must match jamb liner.
2. High pressure die-cast tilt pins, sash tilt latches and lock mechanism mechanically fastened, factory-applied. Sash lock per each unit with lock keeper applied to top sash bottom check rail.
3. Finishes: Matched to existing as specified by Developer.

F. Weather Stripping:
1. Weather strip at head. Two vertical weather strips on each jamb liner. Weather strip at upper sash check rail. Flexible weather strip at bottom of bottom rail.

G. Screens:
4. Consisting of formed aluminum frames with baked-on acrylic coating, molded corner keys.
5. Screen cloth: Vinyl-coated fiberglass
6. Frame finish: To match exterior frame.

H. Simulated Divided Lites:
1. Exterior aluminum or fiberglass exterior muntin and wood interior muntin bars. Bars shall be adhered to exterior and interior glass surface and are to align with interior muntin.
2. Pattern: Configuration to match existing as specified by Developer
3. Finish: To match interior/exterior sash finish.

2.04 ACCESSORIES AND TRIM

A. Wood jamb extensions: Clear treated pine wood

C. Exterior aluminum or fiberglass trim: Style and color to match existing. Color to match exterior frame.

**PART 3- EXECUTION**

## 3.01 INSTALLATION

A. Install windows according to manufacturer's instructions to ensure proper installation and operation.
B. Install windows to be weather-tight and freely operating.
C. Maintain alignment with adjacent work.
D. Secure assembly to framed openings, plumb and square, without distortion.
E. Integrate window system installation with exterior weather-resistant barrier using flashing/sealant tape. Apply and integrate flashing/sealant tape with weather-resistant barrier using watershed principles in accordance with window manufacturer's instructions.
F. Place interior seal around window perimeter to maintain continuity of building thermal and air barrier using insulating-foam sealant.
G. Seal window to exterior wall cladding with sealant and related backing materials at perimeter of assembly.
H. Apply construction grade sealant where specified.
I. Do not puncture aluminum cladding.
J. Leave windows closed and locked

## 3.02 ADJUSTING AND CLEANING

A. Adjust operating sash and hardware to provide tight fit at contact points and at the weather stripping for smooth operation.

B. Clean glass surfaces promptly after installation. Remove excess sealant materials.

D. Initiate and maintain all protection and other precautions required to ensure windows are in acceptable condition at time of substantial completion.

E. Remove labels and visible markings

# Vinyl Replacement Windows

**Schedule of Work** - 1 Bromur Street, Barre (52 windows)

**Replace all Exterior Windows**

Field measure, order and install a vinyl, double hung, double glazed, one-over-one window and jamb including screen, caulk, interior casing and exterior trim.

MUST MEET ENERGY STAR CRITERIA FOR RESIDENTIAL WINDOWS

**MANUFACTURES**

A. New Vinyl Windows Replacement Style
   1. Farley Windows Sol-R Shield Plus 366 **R-Value 4.17**
   2. Half screen.
   3. DH no grid
   4. Substitutions (or equal)

**EXECUTION**

By beginning work, contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to owner.

**CLEANING AND PROTECTING**

1. Remove protective material from factory finished surfaces.
2. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.
3. Remove visible labels and adhesive residue according to manufacturer's instructions.
4. Protect windows from damage by chemicals, solvents, paint or other construction operations that may cause damage.

## Store Front Windows and Door

**Commercial space:**

Change ballast and bulbs only, 16-2lt t8 ballast, 32-F32t8sun

# Ventilation Fan Specification

Schedule of Work – 11 Bailey Street, Montpelier (5 fans) and 37 Barre Street, Montpelier (4 fans).

## Part I – General

As a qualifying component of Vermont's Residential Building Energy Code, at a minimum, each building unit must have an exhaust-only ventilation system (Energy Star qualified low-wattage bath fan with 24-hour control. Electrically efficient central ventilation and heat recovery ventilation systems are encouraged. All bedroom and bathroom doors shall be undercut by a minimum of ½ clear space after carpet installation to allow free airflow. Transfer grilles to allow free air flow are also acceptable. All fans shall be low-noise, meet Energy Star criteria (no less than 2.8 cfm/watt) and have a split capacitor ("brush-less DC" or "electrically commutated") motor designed for continuous duty operation. All fans shall be sized to be capable of providing .35 air charges per hour or 15 cfm per person whichever is larger. The number of persons assumed for in a unit shall be the number of bedrooms plus one. Unless otherwise indicated by the VFEP Screening Tool, all fans shall be controlled by a 24-hour timer programmed to operate continuously while residents are present. Controls shall be programmed for a minimum of 8 hour operation. Fans with integral speed control and local override wall switch are recommended. Fans may be specified as a fan/light combination as desired by Developer.

## Part II: Product Description

Ventilating fan, variable speed controls, motion sensor, light and night-light combination shall be ceiling mount, ENERGY STAR rated type, with no less than 80 CFM and no more than 0.3 sone as certified by the Home Ventilating Institute (HVI) at 0.1 static pressure in inches water gauge. Power consumption shall be no greater than 12.6 watts and ENERGY STAR rated with efficiency rating of no less than 6.3 CFM/watt. The motor shall be totally enclosed with brushless DC motor engineered to run continuously. Power rating shall be 120v/60Hz. Duct diameter shall be no less than 4". Fan shall be UL and cUL listed for tub/shower enclosure when used with GFCI branch circuit wiring. Fan shall be FCC Part 18 compliant and UL listed for insulated ceiling (TYPE IC).

Variable speed controls shall be built-in and activated by a motion sensor with a high/low delay timer.

Lamps shall be of the compact fluorescent type with the fan utilizing no less than two 18 watt energy efficient, compact fluorescent lamps while incorporating a high efficiency electronic ballast. Night-light feature shall be included.

Recommended Manufacturer: Panasonic Whispergreen Lite Model FV08VKML2, or equivalent

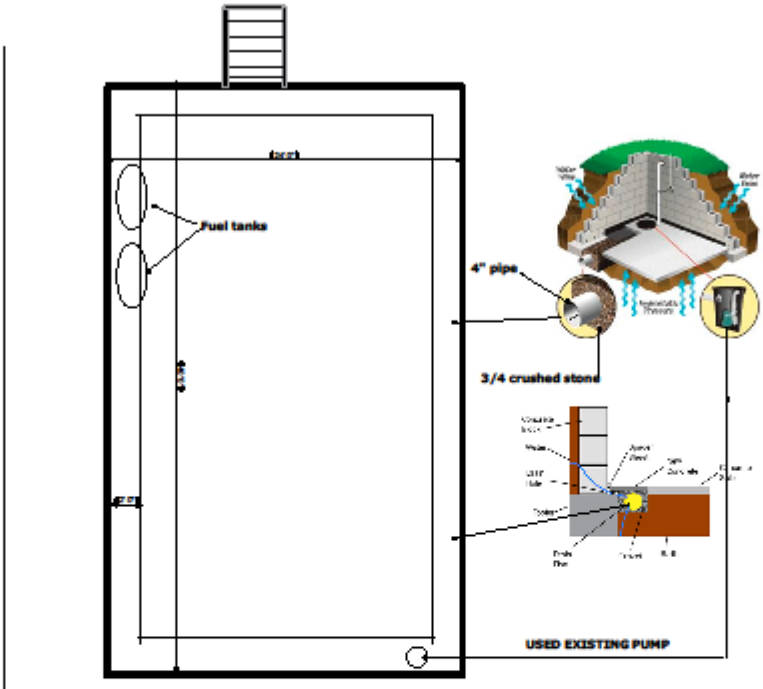
## Part III: Installation and Ductwork

Seal ventilation fans to drywall with caulk or spray foam. All penetrations to the exterior shall also be air sealed with caulk or spray foam.

Duct Work: All ventilation ducting shall be sealed, smooth-wall rigid metal or PVC with as few elbows as possible. Ducts shall be [4"][6"], and pitched to and vented to exterior wall with a dampered terminus. All duct joints shall be sealed with mastic or PVC glue. Duct tape shall not be used to seal joints. Ducts in uninsulated spaces shall be covered by a minimum 4" insulation (when installed adjacent to an insulated surface), or wrapped with a minimum R-6 insulation with a vapor retarder facing on the outer side. All joints where sections of insulation meet shall have overlapped facings and be tightly sealed with fiberglass tape.

Basement Drainage

**Schedule of Work –** 11 Bailey St.




**Interior Pressure Relief System - connected to a sump system**

1. Remove existing concrete and excavated a 24 inch wide by 24" deep trench
2. Install a 4 inch perimeter drain connected to the sump pump.
3. Place new concrete 4 inches thick to seal off trench.

| | | |
|---|---|---|
| | **BASEMENT PLAN**<br>**11 BAILY STREET**<br>**MONTPELIER, VT** | 10/13/2010<br>by Norm Benoit<br>802-476-4493-x203 |

## Air Sealing and Weather Stripping

**Schedule of Work –** 11 Bailey St., Montpelier; 37 Barre St., Montpelier

# Attic/Ceiling Insulation

**Schedule of Work –** 11 Bailey St., Montpelier; 37 Barre St., Montpelier

**General:**

1. Attics/Ceilings shall be insulated to the levels as identified in the VFEP Screening Tool

2. **Prior to any adding any insulation, air seal all air bypasses (leaks from conditioned spaces into attic or rafter cavities).** Locate and seal attic thermal bypasses, chases, and open-topped partition walls. Remove enough of any existing flooring so that a thorough inspection for, and repair of, attic bypasses is possible

3. When insulating attic/ceilings the thermal and pressure boundary shall be aligned. Properly treat ceiling height changes and stairwells as necessary to stop air leakage. Seal knee wall floor cavities. Make sure bypasses are completely sealed before installing any insulation.

4. Insulation material shall be installed in a uniform manner throughout the attic and cover exterior wall plates with a minimum R-60 of insulation, unless otherwise specified in VFEP Screening Tool.

5. Attic insulation must completely cover heated areas and must be installed at an even depth, except where physical constraints exist.

6. Insulation must be installed to the outside edge of the top plate.

7. Insulation may not cover soffits vents or fill the eave/soffit area.

8. Insulation must be installed according to the manufacturer's specifications

9. Attics should be tested using zone pressure diagnostics when the housing construction type or the air leakage rate indicates that there may be hidden air leaks or bypasses into the attic. This test should be conducted prior to, and then after, installing insulation in order to determine the quality and completeness of the air leakage and bypass sealing.

10. If the installation of cellulose insulation on top of existing batt or blanket insulation is warranted, cut and remove or roll back 1 to 2 feet of this insulation at the eave sides of the house so that the top surface of the ceiling material is exposed. If the finished ceiling material is strapped perpendicularly to the joists, remove all of the batt insulation from the joist bays that border the gable ends before insulating with blown cellulose.

**Insulation Coverage and Density**

1. Measure the density of the insulation in a selected test area before beginning the major installation. Blown insulation should be installed using any nozzle type or tubing method. The density of blown insulation must be within the range of the values listed below.

2. Insulate enclosed cavities (under floors and in sloped ceilings and knee wall cavities, etc.) to the following density levels, as long as interior finish materials are able to withstand the pressure without damage:

a. Blown cellulose at a density of 3.25 to 3.75 lb/ft3.

4. Insulate knee wall cavities as follows (both sides of knee walls must be sheathed):

a. Blown cellulose at a density of 3.25 to 3.75 lb/ft3.

6. Calculating the number of bags is the preferred method for determining the proper amount of material to be installed into an attic area at a given R-value.

7. Where the combined material and labor costs can be reduced, it is preferred that dropped soffits and similar construction details be filled with cellulose insulation.

8. When a vapor barrier is installed with the insulation, the barrier should be installed on the warm side of the insulation, but never more than ⅓ of the R-value away from the warm-side surface.

9. Add insulation as necessary to eliminate voids and areas of incomplete coverage. Cut or pull back existing fiberglass batts 1 to 2 feet from the soffit and blow the perimeter.

10. If batts or rolls are used, the first layer should be fit between the joists. The second layer should be placed perpendicular to the first because that will help to cover the tops of the joists themselves and reduce thermal bridging through the frame.

**Vaulted or Sloped Ceiling/Roof Cavities**

1. A vaulted ceiling or sloped ceiling/roof cavities shall be insulated to a value of at least R-40 whenever possible.

2. If existing batt insulation is in place, the vapor retarder should always face the conditioned building space. If this vapor retarder faces a habitable space, the vapor retarder must be covered with a 15-minute fire-rated material, such as ½ inch drywall mudded once, or ¾ inch of wood.

3. If cellulose insulation is installed, the cellulose shall be dense-packed in the vaulted or sloped ceiling/roof cavities.

**Enclosed Ceiling/Floor Cavities**

1. When insulating enclosed ceiling cavities, it is preferred that insulation be installed in the rafter cavities from the attic, through the eave or from the interior of the home, rather than through the roofing material.

**Storage Space**

1. Where attic space is being used for storage, contractors should request the owner remove storage items from the area.

**Ductwork Insulation**

1. Ductwork must be sealed appropriately with the proper materials (duct mastic) before insulation is installed.

2. When working ducts are located in an unconditioned attic, install a minimum of R-8 (preferably R-11 or greater, if possible) on ducts and plenums. It is preferred that attic ducts be draped with unfaced blanket insulation and blown over with loose fill insulation to at least the depth of the surrounding insulation. If faced duct insulation is installed, it is preferred that the facing be to the outside.

3. A minimum of 6 inches of clearance between duct insulation and heat sources must be maintained, unless the insulation material is rated for closer proximity.

**Drill-and-Blow Patching**

1. If a drill-and-blow method is used for installing floor or ceiling insulation, holes must be properly plugged, secured with adhesives, and sealed.

**Attic Ventilation**

1. Ensure that existing vents are not blocked, crushed, or otherwise obstructed. Correct problems as necessary, or replace.

2. All ventilation openings should have suitable louvers and screens to prevent snow, rain, and insects from entering the attic.

**Ceiling loading**

Contractor is responsible for ensuring that the ceiling can bear the loads that will be imposed when insulation (new or additional) is installed.

**Insulating floored attics**

Floored over attic spaces shall be insulated to the highest R-value approaching [R-40] [R-60], without altering the structure.

**Insulating knee walls**

Knee walls adjoining attic spaces shall be insulated to a minimum of R 38. Both side of kneewall cavities must be sheathed. Insulation shall be permanently fastened. Fastening shall be in accordance with the guidelines for underfloor insulation.

**Cavity under knee wall**

The floor cavity immediately below the knee wall shall be air sealed prior to insulation.

**Knee-wall access openings**

If attic access is provided through a kneewall, the access shall be at least 14.5 x 24 inches and be insulated to R-30. All installed knee-wall access shall be easily movable, such as on hinges or screwed. No nails can be used to secure knee-wall access covers.

**Attic Access Insulation**

1. When it is necessary to install an interior access in the ceiling, it must be at least 4 square feet and at least 20 inches in width or length. It shall be weather-stripped and insulated with at least 8 inches of polyisocyanurate (R-50), physical conditions permitting, that is properly secured to the exterior surface of the attic hatch.

Access shall be provided into attic spaces wherever it is practical for a person to reasonably work. Attic access covers and doors that open to conditioned living spaces shall be tight fitting. All installed attic access shall be easily movable, such as on hinges or screwed. No nails can be used to secure attic access covers.

**Framing access openings**

Attic entry access shall be framed to prevent loose-fill insulation from falling or sloughing through the opening. If interior access is to be installed, it shall have an opening of least 14.5 inches by 24 inches, and be installed in a workmanlike manner. In all cases, a rigid dam around the opening shall extend at least four inches above the level of the insulation.

Exception: When the access is located in an area where a rigid dam is not practical, fiberglass batts surrounding the opening and extending back from the opening a minimum of 16” can be used.

**Retractable ladders**

Attic access doors that incorporate retractable ladders or similar devices shall be insulated to at least R-30 by installing an insulating cover over the opening of the attic. This cover shall be designed and installed in a fashion that will allow it to be easily removed and reinstalled by the owner when the attic access is used.

Attic access covers shall be insulated to the same level as the surrounding area.

**Vapor barrier**

Any vapor barrier that is installed shall be located on the warm side of the wall being insulated.

**Potential human contact**

Insulation installed in knee wall side attics that is subject to routine human contact shall be covered with material having a flame spread index of 25 or less and smoke developed index of not greater than 450 when tested in accordance with ASTM- E84-01.

**Sloped ceilings**

Sloped ceiling cavities shall be insulated using one of the following methods:

Dense pack the sloped ceiling area. Seal all penetrations and bypasses along slope to prevent any moisture migration.

Sloped cavities may be insulated with loose fill, batt or rigid insulation while maintaining a ventilated one-inch air space between the insulation and the roof sheathing.

**Recessed lighting fixtures**

Any existing recessed light fixtures or other heat-producing fixtures that are not Type IC-rated, Airtight, metal recessed, and certified by an independent laboratory as being capable of dissipating fixture heat, shall be replaced (by others) with this type fixture. Fixtures marked as UL listed "Recessed fixture Type IC Airtight"shall be covered with a 24” x 24” x 12” thick fiberglass batt, molded around fixture can, to facilitate future access.

**Exhaust fans**

Exhaust fans in attics and/or dropped ceilings are not considered heat-producing fixtures.

Soffits and dropped ceilings

Damming shall be installed in soffits with heat-producing, non IC-rated fixtures prior to installation of insulation. If damming cannot be installed, no insulation shall be installed in the soffit. .

**Flues and chimneys**

If insulation is added, these conditions apply:

All combustible insulation materials shall be kept at least three inches and no more than five inches from metal flues or masonry chimneys.

Any combustible insulation that is found within three inches of a flue or chimney shall be removed.

A retaining wall of either solid, non-combustible material or fire rated material with a flame spread of 25 or less, extending a minimum of four inches above the level of loose-fill insulation shall be installed around metal flues or chimneys.

Non-combustible batt insulation shall not require a shield but shall maintain a 3-inch clearance from chimney or flue.

Seal between a masonry chimney and attic framing using sheet metal or other noncombustible sheet goods and high-temperature (450 degree F) fire-rated caulk. Seal around the metal flue of combustion equipment using a UL-approved metal collar and high-temperature (450 degree F) fire rated caulk.

**Mechanical equipment**

If mechanical equipment is located in unconditioned attic space, seek further specifications from Owner regarding insulation requirements and access.

**Knob and tube wiring in ceilings/attics**

Knob and tube wiring must be completely disabled and disconnected by a licensed electrician prior to any attic insulation.

**Wiring (other than knob and tube)**

Insulation may be installed over wiring (other than knob and tube wiring) found in attics or ceilings when the following procedures are followed.

**Wiring**

All visible wiring shall be inspected to ensure that the covering is intact and that there is no non-conforming wiring, such as extension cords, speaker wiring, automotive wiring, etc. or wiring less than 14 gauge, that is integrated into the house electrical system in the attic.

**Splices and connections**

All splices and connections shall be in UL approved junction boxes that have covers that are attached with screws, and will remain accessible after insulation installation

**Passive ventilation**

Installation of ventilation is allowable. The installation of additional ventilation is not required. If ventilation is installed, the code minimum shall not be exceeded.

**Ventilation baffling**

If specified, baffling shall be installed for those eave/soffit vents that are necessary to meet minimum ventilation requirements. Baffling shall be installed in a fashion that will permanently maintain the airflow from the vent. Baffling shall be installed in a fashion that allows the maximum amount of insulation to be installed over the top plates of outside walls. Baffling shall extend a minimum of four inches vertically above the level of insulation and be stapled on the inside.

### Vent screening

Existing vents which are not screened shall be covered with non-corroding wire mesh with openings of 1/8 inch.

## Foundation Insulation

**Schedule of Work –** 11 Bailey St., Montpelier; 37 Barre St., Montpelier

INSTALLATION OF SPRAY IN PLACE LOW DENSITY FOAM INSULATION

1. Installers: Experienced technicians trained and certified by the manufacturer for installation of the product used.

2. Apply at walls (including band joists) by factory certified technician according to the manufacturer's printed instructions.

3. Examine substrate and conditions under which the spray insulation work is to be performed, with Contractor present, and notify the Contractor of any unsatisfactory conditions, including, but not necessarily limited, to:
a. Excessive dirt or oil on substrate
b. Excessive moisture present including dampness, dew, frost, or water.

4. Install insulation only when the temperature on both sides of the wall is a minimum of 40 deg F during foaming and for a forty-eight (48) hour period after foam has been placed in the wall cavity. If the exterior temperatures are below 40 deg F, the interior temperature must be at least 40 deg for a minimum of eight (8) hours prior to injection and forty eight (48) hours after completion. In any case, the outside temperature must be above 20 deg F unless the exterior wall is protected on the outside by thermal insulation, min R8.

5. During installation, provide a minimum two (2) air changes per hour ventilation for installation personnel. Provide heat only through the use of vented heat sources with no open flame.

6. Cover tools and work of other trades as required to prevent damage from overspray. Do not weld or operate open flame tools of any kind near the installed product. Cover with subsequent work as soon as possible.

7. Apply at walls (including band joists) by factory certified technician according to the manufacturer's printed instructions.

8. Protect installed insulation from exposure to weather and physical abuse. Provide temporary covers for installed work that is not immediately concealed.

9. PROTECT INSULATION WITH FIRE PROTECTANT NEED SPECIFICATION

**ATTACHMENT A**

# CONSTRUCTION WASTE MANAGEMENT PLAN

**Date:**

**Project Manager**

**Name:**

**Company/Employer:**

**Address:**

**Phone(s):**

**Contractor**

**Contact Person:**

**Phone(s):**

**Recycling Coordinator:**

**Phone(s):**

**Project**

**Name:**

**Address:**

**Town:**

**Owner:**

**Project Description:**

**Waste Management Goals:**

- This project will recycle or salvage for reuse a minimum of _____**%** by weight of the waste generated on-site.
- Waste reduction will be achieved through project design, and reuse and recycling efforts will be maintained throughout the construction process.

**Waste Prevention Planning:**

- If there is a local Solid Waste District ("SWD") with jurisdiction where this project is located, compliance with the SWD's mandatory recycling requirements for businesses shall be required. SWD mandatory recyclables may include:
    - newspaper
    - corrugated cardboard
    - white and colored office paper
    - glass bottles and jars
    - metal cans

- Compliance with SWD and Vermont's Landfill Bans, i.e. no disposal of tires, appliances, yard waste, mandatory recyclables, hazardous waste, batteries, fluorescent tubes, and large metal items. See VT Agency of Natural Resources website for further information: http://www.anr.state.vt.us/dec/wastediv/recycling/CandD.htm

- Project Construction Documents – Requirements for waste management which will be included in all work. The Contractor will contractually require all subcontractors to comply with the SWD mandatory recycling requirements. A copy of this Construction Waste Management Plan will accompany all Subcontractor Agreements and require subcontractor participation.
- The Construction Waste Reduction Plan shall be implemented and executed as follows and as on the chart:
    - Salvageable materials will be diverted from disposal where feasible.
    - There will be a designated area on the construction site reserved for a row of dumpsters each specifically labeled for respective materials to be received.
    - Before proceeding with any removal of construction materials from the construction site, Recycling Coordinators will inspect containers for compliance with SWD requirements.
    - Wood cutting will occur in centralized locations to maximize reuse and make collection easier.
    - Hazardous waste will be managed by a licensed hazardous waste vendor.

**Communication & Education Plan:**

- The Contractor will conduct an on-site pre-construction meeting with employees and subcontractors. Attendance will be required for the subcontractor's key field personnel. The purpose of the meeting is to reinforce to subcontractor's key field employees the commitments made by their companies with regard to the project goals and requirements.
- Waste prevention and recycling activities will be discussed at the beginning of each weekly subcontractor coordination meeting to reinforce project goals and communicate progress to date.
- As each new subcontractor comes on site, the recycling coordinators will present him/her with a copy of the Waste Management Plan and provide a tour of the recycling areas.
- The subcontractor will be expected to make sure all their crews comply with the Waste Management Plan.
- All recycling containers will be clearly labeled. Containers shall be located in close proximity to the building(s) under construction in which recyclables/salvageable materials will be placed.
- Lists of acceptable/unacceptable materials will be posted throughout the site.
- All subcontractors will be informed in writing of the importance of non-contamination with other materials or trash.
- Recycling coordinators shall inspect the containers on a weekly basis to insure that no contamination is occurring and precautions shall also be taken to deter any contamination by the public.

**Motivation Plan:**

- The project team will develop and publish a project mission statement that can be distributed to the subcontractors, attached to subcontracts, and posted at the jobsite.

- The General Contractor will conduct a pre-award meeting for subcontractors. Subcontractors under consideration will be required to attend the meeting to review project goals and requirements with the project team. Attendance will be a prerequisite for award of subcontracts. A sign-off will be required by subcontractors attending the meeting that the project goals are understood. This document will be an attachment to every subcontract. Copies of the attachment will be posted prominently at the jobsite.

**Evaluation Plan:**

- The General Contractor will develop and update a graph indicating the progress to date for achieving the project's waste recycling goal of XX% by weight of the total project waste stream.

**Expected Project Waste, Disposal, and Handling:**

The following charts identify waste materials expected on this project, their disposal method, and handling procedures:

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| Material | Quantity | Disposal Method | Handling Procedure |
|---|---|---|---|
| Land clearing debris | | Keep separate for reuse and or wood sale | Keep separated in designated areas on site. |
| Clean dimensional wood and palette wood | | Keep separate for reuse by on-site construction or by site employees for either heating stoves or reuse in home projects.<br><br>Recycle at:<br><br>Local SWD Drop Off Center estim Cost = No charge | Keep separated in designated areas on site. Place in “Clean Wood” container. |
| Plywood, OSB, particle board | | Reuse, landfill | Keep separated in designated areas on site. Place in “Trash” container. |
| Painted or treated wood | | Reuse, landfill | Keep separated in designated areas on site. Place in “Trash” container. |
| Concrete | | Recycle | |
| Concrete Masonry Units | | Keep separate for re-use by on-site construction or by site employees | Keep separated in designated areas on site |
| Metals | | Recycle at:<br><br>Local SWD Drop Off Center | Keep separated in designated areas on site. Place in “Metals” container. |
| Gypsum drywall<br><br>(unpainted) | | Recycle with supplier:<br><br>Example:<br><br>Kamco Supply – Williston | Keep scraps separate for recycling – stack on pallets in provided on site. All scrap drywall will be taken back by contractor to drywall |

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| Material | Quantity | Disposal Method | Handling Procedure |
|---|---|---|---|
| | | Trowel Trades – Colchester | supplier |
| Paint | | Reuse or recycle at Environmental Depot; Cost = $0.25/lb latex, $0.35/lb oil | Keep separated in designated areas on site |
| Insulation | | Reuse, landfill | |
| Flooring | | Reuse, landfill | |
| Carpet and pad | | Reuse or recycle with carpet manufacturer | |
| Glass | | Glass Bottles:<br><br>Recycle at:<br>Local SWD Recycle Center (MRF) | Keep separated in designated areas on site. Place in “Glass/Plastic bottles/Metal Cans/Mixed Paper/<br><br>Cardboard” container |
| Plastics | | Plastic Bottles:<br><br>Recycle at:<br>Local SWD Recycle Center (MRF)<br><br>Plastic bags/scraps:<br><br>Reuse, landfill | Keep separated in designated areas on site. Place in “Glass/Plastic bottles/Metal Cans/Mixed Paper/<br><br>Cardboard” container |
| Beverage | | Recycle at:<br><br>Local SWD Recycle Center (MRF) | Keep separated in designated areas on site. Place in “Glass/Plastic bottles/Metal Cans/Mixed Paper/<br><br>Cardboard” container |
| Cardboard | | Recycle at:<br><br>Local SWD Recycle Center (MRF) | Keep separated in designated areas on site. Place in “Glass/Plastic bottles/Metal Cans/Mixed Paper/ |

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| Material | Quantity | Disposal Method | Handling Procedure |
|---|---|---|---|
| | | | Cardboard" container |
| Paper and newsprint | | Recycle at:<br><br>Local SWD Recycle Center (MRF) | Keep separated in designated areas on site. Place in "Glass/Plastic bottles/Metal Cans/Mixed Paper/<br><br>Cardboard" container |
| **TOTAL** | | | |

**Waste Disposal:** Contractor:

Contact:

- **Name of landfill for disposal of non-recyclable waste:**
  - Transfer Stations:
  - Landfills (ultimate disposal location):
- **Landfill tipping fee:** $_____ / ton
- **Estimate of waste for landfill disposal:**

**Recycling Calculation:**

**If all construction waste was disposed in landfill:** _____ lbs = _____ tons x $_____/ton = **$**_____

**With recycling:** TOTAL = **$**_____

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| RECYCLING OPERATIONS | | |
|---|---|---|
| Action *** | Who | When |
| □ Choose bins/collection methods | | |
| □ Order bins - oversee deliver | | |
| □ Site bins/collection sites for optimum convenience | | |
| □ Sort or process wood | | |
| □ Sort or process metal | | |
| □ Sort or process cardboard | | |
| □ Sort or process drywall | | |
| □ Sort or process SWD mandatory items (material) | | |
| □ Sort or process _____ (material) | | |
| □ Schedule material pickups/dropoffs | | |
| □ Protect Materials from Contamination | | |
| □ Document material pickups/dropoffs | | |

*** Depending on the service option chosen, these may be the responsibility of either the field personnel, the hauler, a full-service recycling contractor, or the subcontractors.

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